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09/976,001	10/15/2001	Takeshi Uchida	566.39787CXI	9500

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EXAMINER

UMEZ ERONINI, LYNETTE T

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 07/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/976,001

Applicant(s)

UCHIDA ET AL.

Examiner

Lynette T. Umez-Eronini

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 3-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Art Unit: 1765

DETAILED ACTION

Claim Objections

1. Claim 8 is objected to because of the following informalities: "forming agent is selected from a group consisting of" Appropriate correction is required. It is suggested that the claim be rewritten as "selected from ~~the~~ group"

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 5, 6, 13, and 17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claims 5 and 6, "The polishing solution . . . consisting essentially of said additive, said protective film-forming agent and water;"

In claim 13, "The polishing solution . . . consisting essentially of said additive, said protective film-forming agent, said second protective film-forming agent and water;" and

Art Unit: 1765

In claim 17, "The polishing solution . . . consisting essentially of said oxidized metal dissolving agent, said additive, said protective film-forming agent and water;" raise new matter that is not supported by the Specification. For search and examination purposes, absent a clear indication in the specification of what the basic and novel characteristics actually are, "consisting essentially of" will be construed as equivalent to "comprising." See, e.g., PPG, 156 F.3d at 1355, 48 USPQ at 1355 ("PPG could have defined the scope of the phrase consisting essentially of for purposes of its patent by making clear in its specification what it regarded as constituting a material change in the basic and novel characteristics of the invention."). When an applicant contends that additional steps or materials in the prior art are excluded by the recitation of "consisting essentially of," applicant has the burden of showing that the introduction of additional steps or components would materially change the characteristics of applicant's invention.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 3-6 and 9; 10-13; and 14-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Sasaki et al. (US 5,770,095).

Sasaki teaches, "... a polishing agent containing a chemical agent responsible for forming a protection film on the surface of a film made of the material containing a metal as a main component by reacting with the material, and containing etching agent consisting of the aforementioned materials(s)" (column 4, lines 44-50). "Examples of the materials containing a metal as a main component include those containing Cu, Cu alloy, ... and the like" (column 3, lines 33-37). "It is preferred that the polishing agent herein should contain an aminoacetic, amidosulfuric acid ..., an oxidizing agent, water, and benzotriazole (same as applicant's protective-film forming agent) ..." (column 4, lines 44-53). "For example, the etching agent containing an aminoacetic acid such as glycine (same as applicant's protective-film forming agent), ... and an oxidizing such as hydrogen peroxide (same as applicant's additive) ... may be used. Another etching agent may be used which is an aqueous solution of ... ammonium salts such as ammonium persulfate, ammonium nitride or an ammonium chloride, and an chromic acid (examples of applicant's oxidized metal dissolving agent)" (column 4, lines 1-9). "... CMP may be carried out in one step using a polishing agent containing the aforementioned chemical agent and etching agent" (column 4, lines 24-26). The aforementioned reads on,

A polishing solution for polishing a metal film surface, comprising:

(1) an additive (2) a protective film-forming agent and (3) water. Since Sasaki uses the same polishing agent to etch a metal surface as claimed in the present invention, then using Sasaki's polishing agent in the same manner as that of the claimed invention would inherently result in an additive which is capable of etching the

Art Unit: 1765

metal film surface at an etching rate of 10nm/minute or lower, a protective film-forming agent, which in combination with said additive, is capable of removing the metal film surface by chemical mechanical polishing at a polishing rate of at least 100 nm/minute and an etching rate of not more than 10 nm/minute, **as in claim 3.**

The said aforementioned further reads on: The polishing agent solution,

wherein said additive is a combination of a first material which is an oxidizer of metal of the metal film surface, thereby forming an oxide of the metal, a second material which dissolves the oxide of the metal, and another protective film-forming agent different from said protective film-forming agent, **in claim 4;**

consisting essentially of said additive, said protective film-forming agent and water, **in claims 5 and 6;**

which is adapted to polishing a metal film surface including a material that contains at least one of copper, a copper alloy, a copper oxide and a copper alloy oxide, **in claim 9;**

A polishing solution for polishing a metal film surface comprising:

(1) an additive which is capable of removing metal of said metal film surface by chemical mechanical polishing, (2) protective film-forming agent, (3) a second protective film-forming agent, and (4) water, **in claim 10;**

wherein said additive is a combination of another protective film-forming agent and a material that oxidizes metal of the metal film surface, **in claim 11;**

Art Unit: 1765

said solution being capable of removing the metal film surface by chemical mechanical polishing at a polishing rate of at least 100 nm/minute and at an etching rate of at most 10nm/minute, **in claim 12**; and

consisting essentially of said additive, said first protective film-forming agent, said second protective film-forming agent and water, **in claim 13**;

A polishing solution for polishing a metal film surface comprising:

(1) an oxidized metal dissolving agent, (2) an additive, (3) protective film-forming agent, (3) a protective film-forming agent, and (4) water. Since Sasaki uses the same polishing agent to etch a metal surface as claimed in the present invention, then using Sasaki's polishing agent in the same manner as that of the claimed invention would inherently result in an oxidized metal dissolving agent, which dissolves an oxide of metal of the metal film surface, an additive which is capable of forming a protective film by at least one of physical adsorption and chemical linkage on the metal film surface, **in claim 14**;

the solution being capable of removing the metal film surface by chemical mechanical polishing at a polishing rate of at least 100nm/minute and at an etching rate of at most 10nm/minute, as **in claim 15**;

wherein additive includes an oxidizing agent that oxidizes the metal of the metal film surface, **in claim 16**; and

consisting essentially of said oxidized metal dissolving agent, said additive, said protective film-forming agent and water, **in claim 17**.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki (US'095) as in view of Kodama et al. (US 5,733,819), as applied to claim 1 above.

Sasaki differs in failing to teach said protective film-forming agent is selected from the group consisting of compounds as recited in the claims.

Kodama teaches, "Further, in the preparation of the polishing composition, various conventional additives may further be added, as the case requires, depending upon the type of the object to be polished, the polishing conditions and other requirements for polishing, for the purpose of stabilization or quality maintenance of the product. Typical examples of such additives include . . . (c) water-soluble alcohols (same applicant's protective film-forming agent having an alcoholic group), such as ethanol, propanol and ethylene glycol, . . . and . . . (e) . . . a polyacrylate (same as

Art Unit: 1765

applicant's film-forming group selected from the group consisting of polymethacrylates)," as respectively in claims 7 and 8.

It is the examiner's position that it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Sasaki by using Kodama's film forming agents as additives in a polishing composition for the purpose of stabilization or quality maintenance of the product (Kodama, column 6, lines 33-34).

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

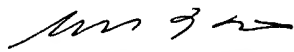
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Art Unit: 1765

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini whose telephone number is 703-306-9074. The examiner is normally unavailable on the First Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech can be reached on 703-308-3836. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

ltue
July 14, 2003


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